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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,482	06/26/2003	Pankai K. Mehrotra	K-1436PCI	5664
27877	7590	05/02/2007	EXAMINER	
KENNAMETAL INC. P.O. BOX 231 1600 TECHNOLOGY WAY LATROBE, PA 15650			SAVAGE, JASON L	
		ART UNIT		PAPER NUMBER
		1775		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/606,482	MEHROTRA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jason L. Savage	1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 02 April 2007.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 25-34 and 55 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 55 is/are allowed.
- 6) Claim(s) 25-34 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date: _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>20070402</u> | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|   | 6) <input type="checkbox"/> Other: _____                          |

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***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2-4-07 has been entered.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 25-34 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is not basis for the limitation in claim 25, line 6 that the heat treatment temperature is "greater than 1400 degrees Centigrade". Claims 26-34 depend from claim 25 and thus are rejected for reciting the same claim limitation.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 25-28 and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jindal et al. (US 5,858,181).

Regarding claims 25 and 28, Jindal teaches a ceramic cutting insert which may be heat treated by sintering or by hot pressing to form a densified insert (col. 3, ln. 32-47). Jindal further teaches that the cutting insert may be subjected to a grinding process to provide a fine surface finish (col. 8, ln. 46-67).

Regarding the limitation that the heat treatment is performed at the claimed temperature, the temperature range that is claimed is similar to that which would be used to sinter the cutting insert.

Regarding the limitation that the heat treatment is performed after the cutting insert has been ground, Jindal is not clear as to any particular order for grinding and heat treated by sintering or hot isostatically pressing. However, the claims are drawn to an article, not the method of making. It is unclear how simply heating the ground insert to a temperature within the claimed range after the insert has been ground would provide any structural difference between the claimed article and that of the prior art. In the alternative, if there is any difference, the difference must be minor and obvious. The burden is shifted to applicants to show that simply heating the ground ceramic cutting insert such as is claimed would be structurally distinct from the insert of Jindal.

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Otherwise a prima facie case of anticipation, or in the alternative, of obviousness has been established.

Regarding claim 26, Jindal teaches that the insert is coated (col. 8, ln. 46-67).

Regarding claims 27-28 and 31, Jindal teaches that the insert may be subjected to conventional ceramic powder processing techniques and densification such as hot pressing or sintering (col. 3, ln. 31-47). As such, it would have been obvious to one of ordinary skill in the art to have subjected the insert of Jindal to a sintering and/or hot isostatically pressing step with a reasonable expectation of success. One would have been motivated to have modified the insert of Jindal in such a manner so as to insure the insert was sufficiently densified and exhibited suitable strength and toughness properties.

Regarding claims 32-34, Jindal teaches that the insert may be alumina based and may contain materials such as silicon carbide whiskers, zirconia, as well as carbonitrides of material such as Ti (col. 4, ln. 1-32). Although Jindal does not exemplify an embodiment wherein titanium carbonitrides are contained in the cutting insert, it would have been obvious to have added them since it teaches carbide and carbonitrides of titanium may be included.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jindal et al. (US 5,858,181) in view of Moriguchi et al (US 5,296,008).

Jindal teaches what is set forth above and further recites that cutting inserts of various materials including silicon nitride based materials may be processed such as is

recited by Jindal (col. 2, ln. 1-17). However, Jindal is silent as to the cutting insert having the composition claimed.

Moriguchi teaches a ceramic cutting insert which is heat treated by sintering having excellent wear resistance and toughness (col. 1, ln. 10-14). Moriguchi further teaches that teaches cutting inserts having a composition which is silicon nitride based and is preferably contained in an amount of at least 90% by weight (col. 4, ln. 53-68). Moriguchi further teaches that other elements may be contained in the insert such as aluminum nitride, alumina, magnesia and yttria in amounts that overlap the ranges claimed (col. 5, ln. 10-30).

It would have been within the purview of one of ordinary skill in the art at the time of the invention to have recognized that any silicon nitride based composition could be employed in the invention of Jindal including the silicon nitride based composition of Moriguchi with a reasonable expectation of success.

Claims 25-28 and 30- are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'174 (JP 04-136174 translation provided by Applicant on 8-4-03).

JP'174 teaches a coated ceramic cutting insert which may be sintered, ground and subsequently heat treated (page 3, Embodiments). JP'174 further teaches that the final heat treatment is performed at a temperature between 1050-1400°C to modify the matrix surface (page 3, Embodiments and page 1, What is Claimed).

Although the claim limitations recite that the heat treatment temperature is greater than (emphasis added) 1400°C, the claims are drawn to an article, not the

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method of making. Applicant has not shown how the claimed article having been heated to greater than (emphasis added) 1400° would be structurally distinct from the insert of JP'174 which may be heated up to 1400°C.

Regarding claims 27 and 31, JP'174 does not teach that the cutting insert is hot isostatically pressed after sintering and prior to grinding. However, hot pressing is known in the art to for densifying the insert and improving the strength and toughness of the formed insert. It would have obvious to one of ordinary skill in the art to have subjected the insert to hot pressing in order to densify and improve the properties of the insert.

Regarding claim 30, JP'174 teaches that the ceramic cutting insert may have a composition which is silicon nitride based and may further contain additives of alumina, aluminum nitride, magnesia and zirconia (p. 3, Embodiments).

### ***Response to Arguments***

Applicant's arguments filed 4-2-07have been fully considered but they are not persuasive.

### **Rejection of Claims 25-26, 28 and 30 under 35 USC §102/(b)/35 USC §103(a) over Moriguchi**

Applicant argues that Moriguchi does not teach a ground cutting insert having the microstructure of the instant invention and refers to the disclosure in the specification in paragraphs [0068-0069]. From this disclosure, the limitation that the insert is ground is being interpreted as meaning the surface region of the insert had gridlines and a

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relatively flattened structure wherein the ground areas are characterized by acicular grain structures. In light of this definition, Moriguchi is no longer considered to read on the claim limitations having the recited microstructure from grinding.

**Rejection of Claims 25-28 and 31-34 under 35 USC §103(a) in view of Jindal**

Applicant argues that the heat treatment after grinding taught by Jindal is performed at 400°C which does not fall within the temperature ranged claimed by Applicant.

As was set forth in the rejection above, Jindal teaches that the insert may be sintered and the temperature range claimed is similar to that which would be used to sinter the cutting insert. It is unclear how simply heating the ground insert to a temperature within the claimed range after the insert has been previously sintered and ground would provide any structural difference between the claimed article and that of the prior art. In the alternative, if there is any difference, the difference must be minor and obvious. The burden is shifted to applicants to show that simply heating the ground ceramic cutting insert such as is claimed would be structurally distinct from the insert of Jindal. Otherwise a prima facie case of anticipation, or in the alternative, of obviousness has been established.

While the post grinding heat treatment step described in the specification between pages 8-10 would be substantially different from a 'heat treatment' which could amount to reheating of the ground insert, the claim limitation is not commensurate in

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scope with the process described in the specification. Applicant has not shown how heating of the insert would provide any structural difference from the article of Jindal.

**Comments on the Information Disclosure Statement**

Applicant recites that Japanese Patent Publication 04-136174 would not read on the claimed invention since it limits the heat treatment of the ground matrix surface to between 1050 and 1400°C whereas the claims not recite the heat treatment is performed at a temperature greater than (emphasis added) 1400°C. This argument is not persuasive for the reasoning set forth in the rejections above. Furthermore, the limitation that the heat treatment be performed at a temperature greater than 1400°C is considered new matter and should be removed from the claims.

***Allowable Subject Matter***

Claim 55 is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Savage whose telephone number is 571-272-1542. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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4-30-07



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